Willard City Corporation

Water Conservation Plan

2019

Updated By

JONES & ASSOCIATES

Consulting Engineers

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SECTION I - SYSTEM PROFILE

SERVICE AREA

Willard City currently serves all areas within the City boundaries (See Map 1). The current City boundary includes approximately 7.20 square miles.

Willard currently provides culinary water to approximately 2,040 people through 683 connections. This water is intended for indoor, sanitary, and commercial uses. Although many properties throughout the City are flood-irrigated with water from Willard Creek, currently there is no pressurized secondary water system so residents rely on culinary water for outdoor and landscaping needs.

Table 1.1 below lists each type of connection and the total number of each, as of 2018.

Table 1.1 - Number of Connections

Connection Type	Total
Residential / Domestic	657
Commercial	13
Institutional	13
Industrial	0
	683

SUPPLY

Willard City obtains its water from two wells and one spring. The City does not contract with any outside agency for supplemental water. The City has one additional well that is neither treated nor connected to the City's system and is used for irrigation of a City park. Based on the 2017 Willard City Culinary Water Capital Facilities Plan (2017 CFP), the total available water supply is 1,350 acre-feet per year. As can be seen in Table 1.2, only about 42% of the available source is used.

Table 1.2 below shows a breakdown of the current water sources, as of December 2018.

Table 1.2 - Existing Water Sources

Source	Volume (Acre-Feet)	Total (Acre-Feet)
Wells	513.8	513.8
Springs	54.4	54.4
		568.2

STORAGE RESERVOIRS

The adopted storage level of service for the City is approximately 400 gallons per Equivalent Residential Unit (ERU). The City has three storage reservoirs in service that together can hold 1,100,000 gallons of water (See Table 1.3). Per the Fire Marshall, of this amount, 330,000 gallons has been designated as fire storage.

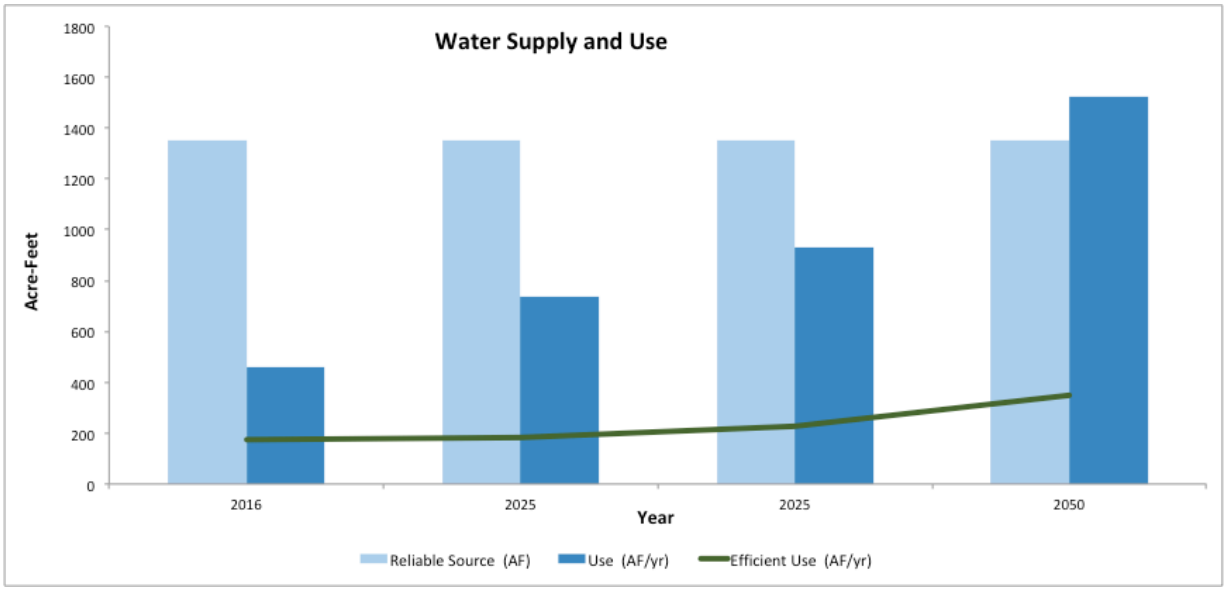
Table 1.3 - Storage Reservoir Capacity

Name	Capacity (gal)
Upper Tank	500,000
Lower Tank #1	400,000
Lower Tank #2	200,000
Total	**1,100,000**
Excluding Fire	**770,000**

WATER SUPPLY & USE

As illustrated in graph 1.1 below, the City's water supply verse projected use is deficient by year 2045. Through this time; however, the City efficiently uses water.

Graph 1.1 - Water Supply and Use



FUTURE WATER SOURCES & COST PROJECTION

The Willard City Capital Facilities Plan, completed in 2017, indicates that an additional 975 acre-feet of water will be needed to support full build of the City in 2066. It is anticipated that additional water will be available through redevelopment of existing sources such as diverting, treating, and connecting the existing well used solely for irrigation of the City park into the culinary system and constructing a separate pressurized irrigation system to reduce the peak culinary water usage. The City may also consider acquiring new sources through drilling new well(s).

WATER MEASUREMENT & BILLING

Meters: All of the connections to the water system are metered and read monthly using the automated Master Meter System. Table 1.4 below shows the City's current metered connections.

Table 1.4 – Metered Connections

Connection Type	Percentage of System	Reading Frequency	Replacement Schedule
Residential	96%	Monthly	As Needed
Commercial	1.90%	Monthly	As Needed
Industrial	0%	NA	NA
Institutional	1.90%	Monthly	As Needed
Government	0%	NA	NA

New Development: All new developments are required to follow Title 12-400, Subdivision Regulations, of the City Code. As part of the approval process, the City Engineer checks the available water resources against the current Capital Facilities Plan. If the water model indicates that the proposed subdivision can be served, then the subdivision is allowed to proceed through the approval process.

During construction of the subdivision, City staff oversees and inspects the water system to ensure the installation meets City Standards. Contractors are required to check out temporary meters from the City to account for water used for construction activities.

SYSTEM WATER LOSS CONTROL

The average yearly system loss between 2005 and 2013 was 20.43%, or an average efficiency in use of 20.43% each year. When analyzed during a five year period, 2009-2013, the average efficient use increases to 25.19% efficiency each year. Table 1.5 below shows the annual metered source, annual use, and percentage loss for the past five years. The average loss over this time is -21.30%, or an average deficiency of 21.30% each year. This is significantly lower than the average from the previous five years and is largely attributed to the 1995 Well Source inflow not being reported.

Table 1.5 – Annual Information

Year	Population	Annual Source (AF)	Annual Use (AF)	% Difference
2014	1,774	446.77	442.25	1.01%
2015	1,850	154.01	405.47	-163.27%
2016	1,870	524.17	457.63	12.69%
2017	1,950	511.20	312.11	38.95%
2018	2,040	568.2	544.7	4.10%

The City monitors the amount of water taken at each of its sources. The amount of water produced from year to year from the wells and springs will vary depending on groundwater and snowpack conditions. The largest discrepancy in the available source verse the source used can be contributed to leaks, tank overflows/spills, meter reading errors and software reporting problems.

Losses are controlled through the following means:

SCADA System: Each storage reservoir is equipped with a SCADA system that provides continual monitoring of water storage. In the event there are issues with the pressure or levels of water, the City's designated employees are immediately alerted and able to quickly resolve the issue.

Internal Audit: The City audits their system three ways:

1. An internal audit of 1% of all connections is completed annually by City staff. Employees verify meters are properly functioning and replace those that are not.
2. A "zero consumption" meter report is created every other month. Each meter is investigated and replaced as needed.
3. The meter readings are reviewed monthly. When readings indicate higher than normal outflows, the staff investigates, notifies the customer, and, if needed, repairs the issue(s). This helps to decrease the amount of time between the potential leak being identified and being repaired by either the City or the customer.

Meters on Hydrants / New Line Flushing: The City meters all fire hydrant and new subdivision connection flushing. This helps to ensure the water is accounted for and the City is paid accordingly. If a contractor is found using a fire hydrant without a meter, the City considers this to be theft of service and imposes a fine.

INCREASING RATE STRUCTURE

The following table outlines the current water rate schedule adopted by Resolution and effective in 2007. The base allotment each month is less than 25,000 gallons. For every 1,000 gallons used thereafter, an additional fee is assessed on a tiered schedule that increases in correlation with the use.

Table 1.6 - Water Rate Schedule

Connection	$ Base Rate / Month	Allotment (Gal)	Additional Fee / 1,000 Gal
Residential	$25.00	<25,000 gal	-
		25,001 – 100,000	$1.10
		100,001 – 200,000	$1.20
		200,001 – 300,000	$1.50
		300,001 – 400,000	$2.00
		400,001 – 500,000	$3.00
		500,001 – 1,000,000	$4.00
		1,000,001+	$5.50
Non-Resident (Commercial)	$28.00	<10,000 gal	-
		10,001 – 100,000	$1.10
		100,001 – 200,000	$1.20
		200,001 – 300,000	$1.50
		300,001 – 400,000	$2.00
		400,001 – 500,000	$3.00
		500,001 – 1,000,000	$4.00
		1,000,001+	$5.50

WATER USE

Potable Water

Table 1.7 below shows the potable water inflow verse the water outflow for each type of use from 2005 through 2018.

Table 1.7 – Potable Water Use*

Year	Inflow	Outflow							% Diff.
	Total (AF)	Res.	Comm.	Ind.	Inst.	Stock	Other	Not Metered	
2005	477	353.94	36.85	0	23.4	0.54	0	0	13.05%
2006	413.9	392.55	41.61	0	27.47	0.66	0	0	-11.69%
2007	523.8	406.35	35.17	0	25.92	0.29	0	23.02	6.31%
2008	888.2	392.59	31.86	0	28.82	0.33	0	23.02	46.34%
2009	633.7	382.05	31	0	25.08	0.41	9	23.02	25.74%
2010	544.4	400.63	31.1	0	26.88	0.48	0	35.35	9.18%
2011	583.5	350.64	22	0.11	20.65	0.42	0	9.28	30.92%
2012	582.8	453.25	22.76	0	26.73	0.37	0	10.49	11.87%
2013	505.8	423.53	19.32	0	22.75	3.64	0	10.67	5.12%
2014	436.2	390.89	19.2	0	21.32	0.34	0	10.5	-1.39%
2015	143.5	365.61	18.8	0	21.06	0	0	0	-182.56%
2016	512.2	413.36	20.54	0	23.74	0	0	0	10.65%
2017	496.9	270.02	15.04	8.33	18.73	0	0	0	37.19%
2018	568.2	477.95	33.64	0	33.13	0	0	0	4.13%

*Information obtained from Utah Division of Water Rights Water Records/Use Information and does not include the 1936 Irrigation Well

This analysis shows an average efficiency of 0.35% per year in the distribution system between 2005 and 2018. Further analysis indicates; however, that between 2005 and 2013 the average efficiency increases to 15.20% and significantly decreases in efficiency between 2015 and 2018 down to -26.4%. If; however, we remove 2015 – the year when the inflows for one of the wells was not reported, and only analyze 2016-2018, the efficiency increases to 17.32%. While the system remains efficient, it is clear that it is not as efficient as it once was.

The goal of the City is to reduce losses even further as additional improvements are made to the water infrastructure.

Non-potable Water

The City has one well, the 1936 Well, that is used solely for irrigation and is not attached to the culinary system. The water from this source is used to irrigate the City's park. Neither the source inflow and outflow are metered, making the information available based on estimations only. Table 1.8 below lists the estimated inflow for the well.

Table 1.8 – Non-Potable Water Use*

Year	Inflow (Total AF)
2005	22.4
2006	0
2007	-
2008	-
2009	23.02
2010	353.54
2011	9.28
2012	10.49
2013	11.55
2014	10.50
2015	10.50
2016	11.97
2017	14.42
2018	0

*Information obtained from Utah Division of Water Rights Water Records

USE - GALLONS PER CAPITA PER DAY

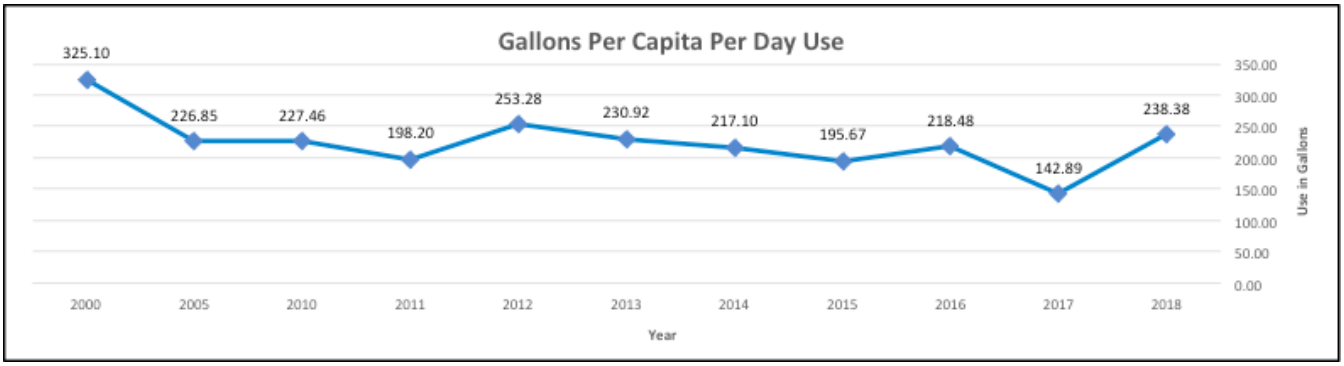
Table 1.9 below illustrates the gallons per capita per day by type of connection for 2018. The City does not provide or measure secondary water. Residents typically flood-irrigate their property using Willard Creek or utilize culinary water for irrigation.

Table 1.9 – 2018 GPCD by Use Type

	Indoor (Winter Use)	Potable (Outdoor)*	Non-Potable (Secondary)*	Total
Residential	209.16	NA	NA	209.16
Commercial	14.72	NA	NA	14.72
Institutional	14.49	NA	NA	14.49
Industrial	0	NA	NA	0
Total	238.38	-	-	238.38

Graph 1.2 below illustrates the Gallons per Capita Per Day Use trend, indicating an overall decrease in water use and increase in conservation.

Graph 1.2 – Gallons Per Capita Per Day



SECTION 2 – CONSERVATION PRACTICES

CURRENT CONSERVATION

Willard City places a high value on the conservation of water and is already practicing the following:

- The City has replaced all water meters with electronic-read meters. This not only allows for low flow measurements to be captured, but also increases the overall accuracy for tracking water usage.

- Each year, the City audits 1% of all meters to ensure proper function and replaces them as needed.

- The City provides water conservation education and public outreach through:
    - Providing conservation tips on City's website
    - Providing a copy of the Annual Consumer Confidence Report with a utility bill.

- The City maintains memberships in supporting organizations like the Rural Water Association that educate our personnel and keep up to date on source protection, public education and current regulations.

- The City continues to complete infrastructure projects identified in the Capital Improvement Plan.

CONTACT

The following individuals are responsible for meeting efficiency goals:

Mayor Kenneth Braegger & Members of the City Council
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Doug Thompson, Public Work Director
Phone: 435-734-9881
Email: dthompson@willardcity.com

EVALUATION OF EXISTING CONSERVATION EFFORTS

In the 2014 Water Conservation Plan, the City established four goals based upon the issues identified. The goals and status of each are provided below:

Goal 1 – Reduce the City's per capita water use by 10% in five years. Based on information used for the Willard City Culinary Capital Facilities Plan, the City currently uses approximately 350 gallons of culinary water per person per day (gpcd). A large amount of this water is used to irrigate landscaping during the summer. The goal is to bring this number under 315 gpcd within 5 years.

Status: *This goal was exceeded by more than 33% and water usage decreased by more than 40%. In 2019, the City reported approximately 208 gpcd.*

Goal 2 – Maintain a financially feasible water system. Water rates established correctly can encourage conservation yet still maintain ample supply. The City can establish a more aggressive tiered rate structure to help encourage conservations.

Status: *The City has been reviewing water rates and will be considering a more aggressive tiered rate structure beginning in FY 2021.*

Goal 3 – Continue Public Conservation Education Program. Willard City sends out public education information to promote water conservation. An example of a flyer that can be distributed to water users with their bill is contained in Appendix A (See 2014 Conservation Plan). In addition, the Willard City website will be used for education on methods of water conservation.

Status: *As evidenced with the progress of Goal 1 above, the City is reaching the public and making an impact with outreach efforts. The City has placed information on its website to further educate residents.*

Goal 4 – Replace supply measurement meters. The meter from the spring source does not measure low flow. In order to more accurately account for water usage the source amounts must be accurate. It is necessary to replace the meter with a unit capable of accurately measuring low flow.

Status: *Due to the location on the mountain east of the City, it is challenging to reach this Spring with the equipment needed. The City is continuing to explore ways to improve the Spring and maximize the use of this source, but as of yet, not have been financially feasible.*

Goal 5 – Replacement of deteriorated water lines. A priority list will be made of deteriorated lines that frequently develop leaks for replacement. These lines will be replaced as funds allow.

Status: *The City has completed projects as identified in the 2017 Capital Facilities Plan. The completed projects include waterline replacements and a new culinary water tank.*

NEW BEST MANAGEMENT PRACTICIES & IMPLEMENTATION PLAN

In addition to continuing existing practices and implementing the 2017 Capital Facilities Plan, the City plans to also:

Goal 1 – Utilize Spring Source. The City will continue to explore and, where feasible, implement methods to capture water from the spring source. These efforts will be documented and provided with the next report.

Goal 2 – Reduce Water Use. Over the next five years, it is the goal of the City to increase overall water efficiency by 5%, bringing the average water use efficiency from 17.32 to 22.32%.

1. Install outlet meters on reservoir sites and overflow to better account for water use.
2. Reduce governmental water use at City building and parks by 5%.
3. Evaluate the implementation and construction of a secondary water system.
4. Repair and replace aging infrastructure, as identified in the 2017 Capital Facilities Plan.
5. Increase tiered rate structure by Fiscal Year 2021.

Goal 3 – Additional Resources. Within the next 5 years, is is the goal of the City to hire 5 additional Public Works employees to assist with the operation and maintenance of the water system.

PUBLIC INFORMATION, EDUCATION, & PROGRAMS

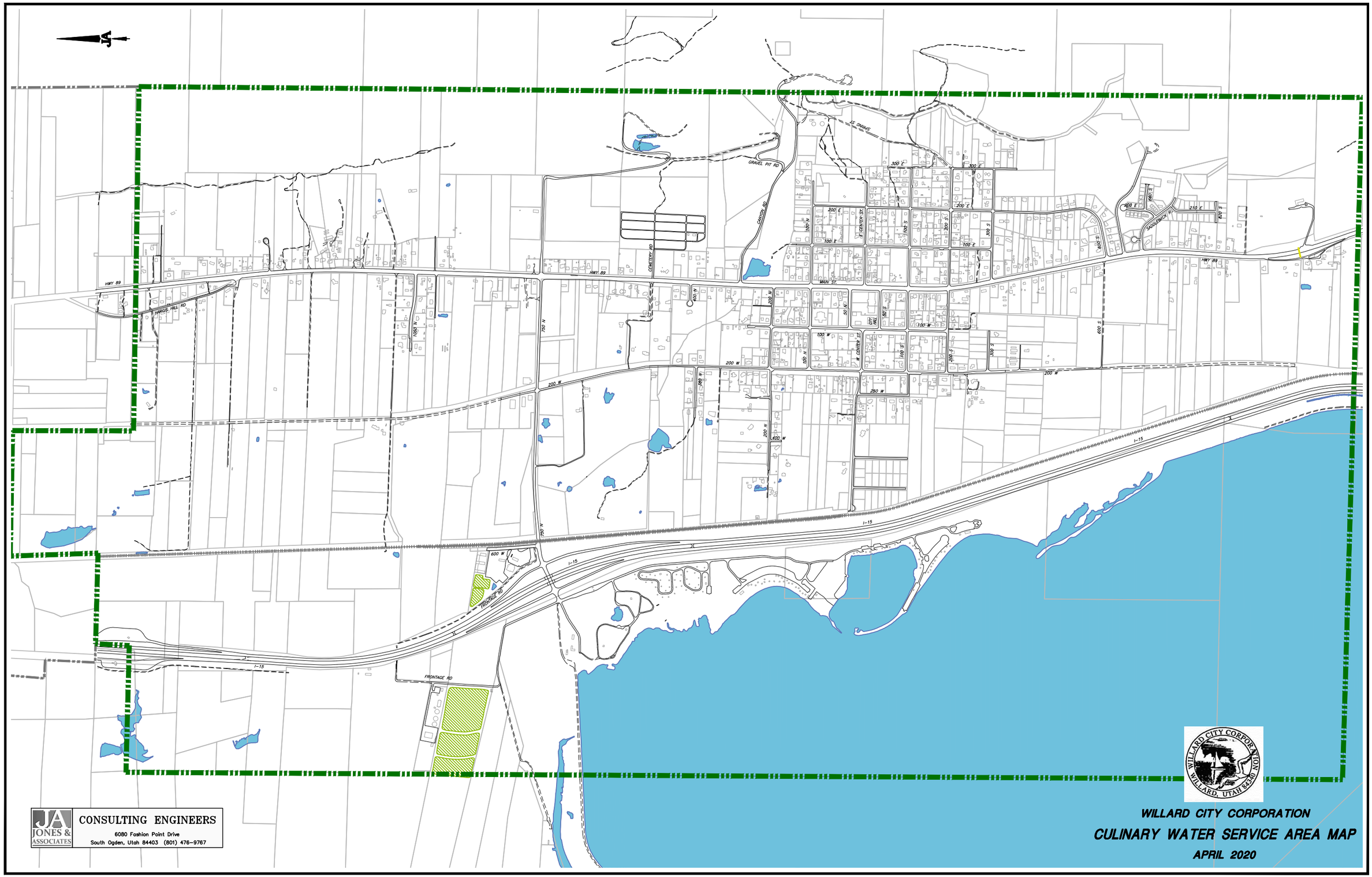
The City recognizes that conservation requires active participation from all users. To increase participation, the City utilizes the City's website; monthly newsletters; and works to educate high-use consumers individually.

- City Website: http://www.willardcity.com/utilities.html
- Example newsletters

ORDINANCES & STANDARDS IN PLACE

The following ordinances and standards have been adopted and are currently in place:

- Water Shortage Plan, 2014
- Public Work Standards, 2019
- City Code, Title 12-400 Subdivision Regulations



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CONSULTING ENGINEERS

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WILLARD CITY CORPORATION

CULINARY WATER SERVICE AREA MAP

APRIL 2020

RESOLUTION 2020-8
A RESOLUTION APPROVING THE
2019 WILLARD CITY WATER CONSERVATION PLAN
APRIL 2020

BE IT HEREBY RESOLVED, by the City Council of Willard City, State of Utah, as follows:

WHEREAS, Willard City has a Water Conservation Plan (in accordance with U.C.A. 73-10-32) that establishes conservation planning efforts identifying water supply inventory for both present and future water requirements and establishes implementation procedures;

WHEREAS, the City Engineer and Culinary Water Systems Superintendent have reviewed and recommend the adoption of the Water Conservation Plan,

WHEREAS, the City Council has reviewed the recommendation,

WHEREAS, a public meeting was held on May 28, 2020

NOW THEREFORE BE IT RESOLVED, Willard City hereby adopts the **2019 Water Conservation Plan**, dated April 2020 for the geographic City boundary. The plan was updated by Jones and Associates Consulting Engineers.

PASSED AND ADOPTED by the City Council of Willard City on May 28 2020.

Mayor

ATTEST:

City Recorder

WILLARD CITY COUNCIL
NOTICE

The Willard City Council of the Willard City Corporation will hold a meeting on Thursday May 28, 2020. The meeting will be held at the Willard City Offices 80 W 50 S. The meeting will be held in accordance with social distancing requirements. Individuals wishing to join the meeting electronically can email willardcity@comcast.net for the meeting information. The meeting will begin promptly at 6:30 p.m. The agenda will be as follows:

1. **Call to Order**
   a. Invocation
   b. Pledge of Allegiance
2. **Open Comment Period** (Individuals have three minutes for open comments. If required, items may be referred to department heads for resolution. Items requiring action by the City Council will be placed on the agenda for a future meeting.)
3. **Business**
   a. Planning Commission
      1) Planning Commission Report
   b. Lewis, Young, Robertson & Burningham - Presentation on Water Impact Fee Study and update on process
   c. Consideration of Resolution 2020-08 A RESOLUTION ADOPTING THE APRIL 2020 WATER CONSERVATION PLAN
   d. Consideration of Resolution 2020-9 A RESOLUTION AUTHORIZING THE WILLARD CITY POLICE DEPARTMENT TO RETAIN EVIDENCE NOT CLAIMED FOR DEPARTMENT USE
   e. Discussion and decision on the Youth Baseball program for the 2020 season
   f. *Discussion and requested approval of a Mediation Agreement
   g. Chris Davis update on a policy for water overage due to a leak.
   h. Approval of expenditures – purchases
   i. Approval of Minutes-April 23, 2020 meeting
   j. Financial
      1) Presentation of preliminary 2020-21 Fiscal year budget
      2) Warrants
      3) Vouchers
      4) Reports
4. **Department Reports**
   a. Maintenance Department
      1) Purchase approvals
   b. Police Department
      1) Purchase approvals
   c. Fire Department
      1) Purchase approvals
5. **Council members**
   a. Brad Robb
   b. Josh Braegger
   c. Fred Ward
   d. John Seamons
   e. Kaleb Kunzler – 4th of July Update
6. **Mayor's General Correspondence and Information**
   a. Review of City Clean up.
7. **Adjourn**

I, designated recorder for Willard City hereby certify that the foregoing notice and agenda was posted at the Willard City Hall and on the State of Utah Public Meeting Notice Website May 21, 2020.

Recorder, Willard City

In compliance with the Americans with Disabilities Act, individuals needing special accommodations (including auxiliary communicative aids and services) during this meeting should notify the City Office at 80 West 50 South, Willard, Utah 84340, phone number (435) 734-9881, at least three working days prior to the meeting.

Revised 5/27/20